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IS 844-1 (1979): Screwdrivers, Part 1: Technical Supply Conditions [PGD 5: Assembly Hand Tools]

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Indian Standard

SPECIFICATION FOR SCREWDRIVERS

PART I TECHNICAL SUPPLY CONDITIONS

(Second Revision)

Hand Tools Sectional Committee, EDC 12; Metal Workers' Tools Subcommittee, EDC 12 : 2 [Ref : Doc : EDC 12 (2927)]

1. Scope — Covers technical supply conditions for hand-operated screwdrivers for slotted head and grub screws, requirements in respect of material, hardness, workmanship and finish and methods of test. Specifices the dimensions for three types of screwdriver points and also gives guidance in respect of the correct application of screwdriver points for various sizes of screws.

2. Nomenclature — For the purpose of this standard, the nomenclature as given in Fig. 1 shall apply.

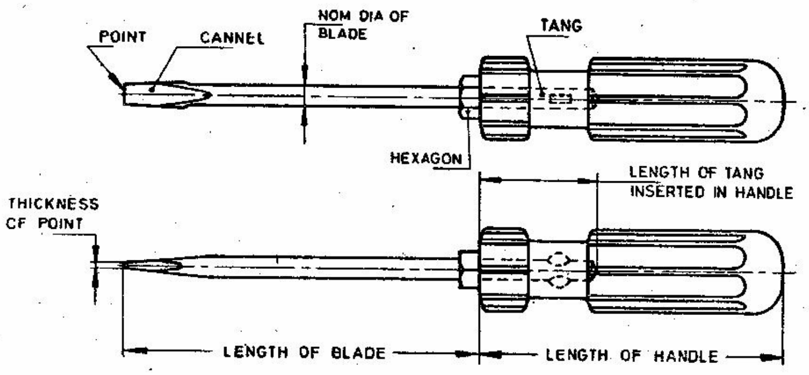

FIG. 1 NOMENCLATURE FOR SCREWDRIVERS

3. Material

3.1 *Blade* — The blades shall be manufactured from suitable steels which after a suitable heat-treatment fulfil the requirements laid down in **4** and **8**. Some of the suitable steels for the manufacture of screwdriver blades are 50Cr1V23 with sulphur and phosphorus contents of 0·05 percent each and C55 as specified in IS : 1570-1961 'Schedules for wrought steels for general engineering purposes'.

3.2 *Handles*

3.2.1 *Wooden handles* — The wooden handles when supplied shall conform to class 5 of IS : 620-1975 'Specification for general requirements for wooden tool handles (*third revision*)'.

3.2.2 *Plastics handles* — Shall be solid and manufactured from cellulose acetate. Other suitable plastics may also be used depending upon the agreement between the supplier and the purchaser. One of the suitable plastics for this purpose is cellulose acetate conforming to IS : 2543-1964 'Specification for cellulose acetate moulding and extrusion materials'.

3.3 *Ferrules* — The ferrules shall be manufactured from steel conforming to type D of IS : 513-1973 'Specification for cold rolled carbon steel sheets (*second revision*)'.

3.4 *Insulating Sleeves* — The blades of the screwdrivers may also be provided with insulating sleeves depending upon the agreement between the supplier and the purchaser. In case the insulating sleeves are to be provided they shall conform to IS : 1951-1961 'Specification for polyvinyl chloride sleeving for electrical purposes'.

Adopted 27 June 1979

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4. Hardness — The screwdriver blades shall be properly heat-treated on their full length ant hall possess a minimum hardness of 485 *HV* (48 *HRC* approx) over at least four times the width of the screwdriver blades from the working end of the blade.

5. Dimensions

5.1 The dimensions for screwdriver points shall be as given in Table 1.

5.2 The dimensions of the plastics handles of the screwdrivers shall be according to Table 2.

5.3 The dimensions and shape of the wooden handles of the screwdrivers shall be as agreed to between the purchaser and the supplier.

5.4 Recommendations for correct application of screwdriver points for use with slotted head and grub screws are given in Table 3.

6. General Requirements

6.1 The blades shall be free from seams, burrs, cracks or other manufacturing defects and shall be finished smooth and bright all over.

6.2 The handles shall be provided with proper serrations so that the handles do not slip during usage. The handles shall be finished smooth and shall be convenient for holding.

6.3 The screwdriver points shall be ground blunt and shall lie in the same plane as the axis of the blade.

7. Finish—The blades of screwdrivers shall be protected against rust by plating with nickel, chromium or zinc; or by any other suitable process. A clear polish or lacquer shall be applied to wooden handles to give a good finish.

8. Tests

8.1 *Torque Test*—For the purpose' of torque test any suitable device which permits the application of a known load in the correct manner may be employed. A simple device recommended for this test is shown in Fig. 2 (also *see* **8.1.1**). The screwdriver point shall be inserted in slot and the handle shall be clamped suitably in the middle of the natural manual grip. The working *end* of the blade shall be subjected to a torque as laid down in Table 4. The torque shall be applied gradually without jerk and without any relative slippage. At the completion of the test the screwdriver shall not show any crack, rupture or any sign of permanent deformation or any other damage which may influence the usability of the tool.

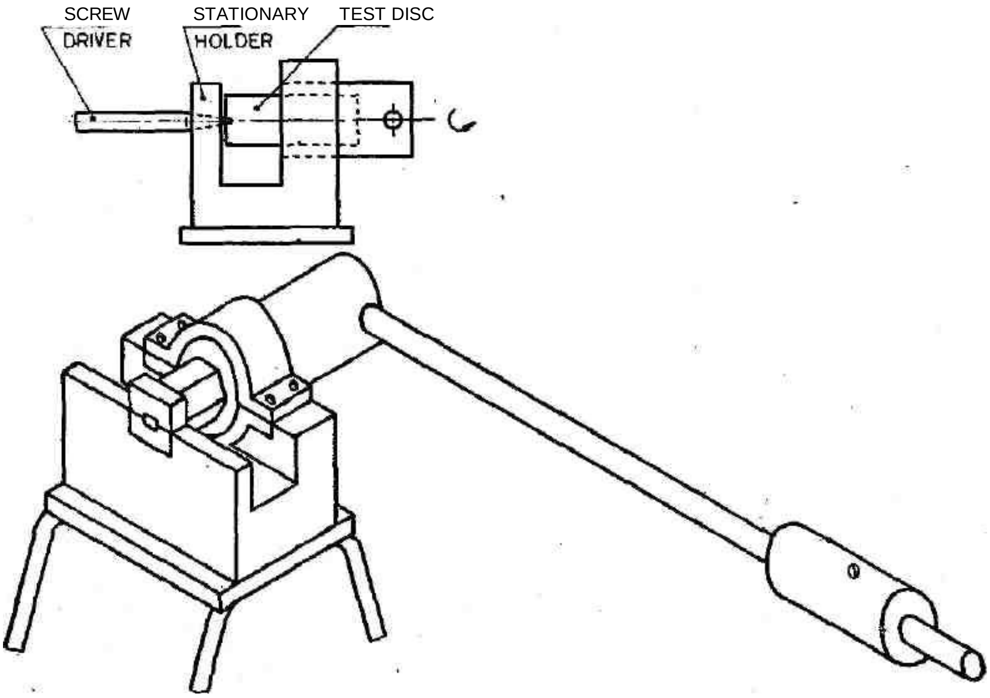
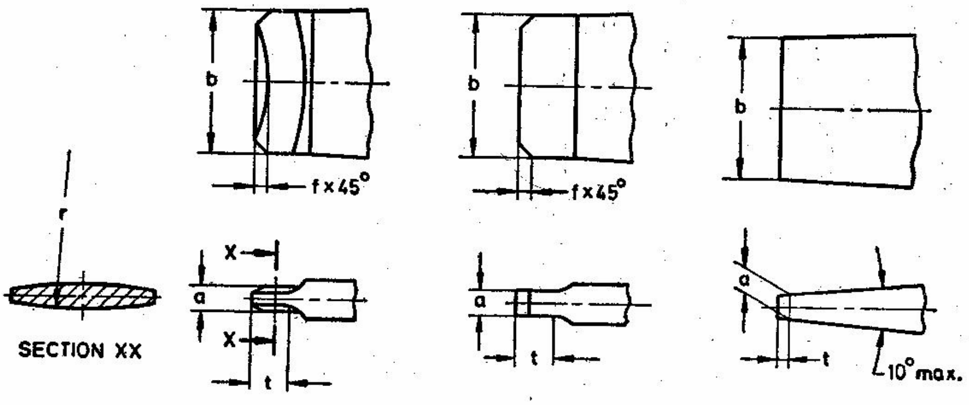


FIG. 2 TORQUE TESTING DEVICE FOR SCREWDRIVERS

TABLE 1 DIMENSIONS FOR SCREWDRIVER POINTS, TYPES 1, 2 AND 3

(*Clauses* 5.1 *and* 8.1.1)



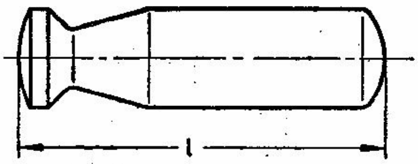
TYPE 1 TYPE 2 TYPE 3

All dimensions in millimetres.

Nominal Screwdriver Point Size *a* × *b*	Tolerance on *a*	Tolerance on *b*	*t*, *Min*	*f*, *Approx*	*r*, *Approx*
0·4 × 1·6	+0·06 −0·00	−0·14	0·7	—	—
0·4 × 2·5	+0·06 −0·00	−0·14	0·7	—	—
0·5 × 3·5	+0·06 −0·02	−0·18	1·0	0·3	—
0·6 × 4·0	+0·06 −0·04	−0·18	1·1	0·3	—
0·6 × 5·0	+0·06 −0·04	−0·30	1·3	0·3	—
0·8 × 5·5	+0·06 −0·04	−0·30	1·6	0·6	—
1·0 × 6·5	±0·06	−0·36	2·0	0·6	50
1·2 × 8·0	±0·06	−0·36	2·3	0·6	80
1·6 × 10·0	+0·06 −0·09	−0·36	2·7	0·9	140
2·0 × 13·0	+0·06 −0·12	−0·43	3·6	1·0	170
2·5 × 16·0	+0·06 −0·14	−0·43	4·5	1·1	200
3·0 × 14·0	+0·06 −0·14	−0·43	6·0	1·2	250
4·0 × 22·0	+0·06 −0·19	−0·52	8·0	1·5	300
5·0 × 25·0	+0·06 −0·19	−0·52	10·0	1·5	400

TABLE 2 DIMENSIONS FOR PLASTICS HANDLES OF SCREWDRIVERS

(*Clause* 5.2)



Type	$l\,^{0}_{-5}$ mm	Volume cm³
L	60	5
L	70	7
L	80	14
L	90	25
L	100	35
L	110	50
L	120	70
M	70	23
S	50	23
S	25	5

L = Long grip
M = Medium grip
S = Small grip

Note — The values of volume are for the purpose of guidance only.

TABLE 3 RECOMMENDATIONS FOR APPLICATION OF SCREWDRIVER POINTS

(*Clause* 5.4)

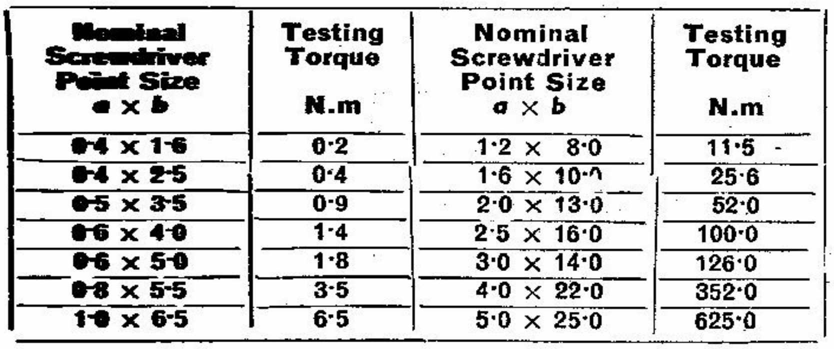
All dimensions in millimetres.

Nominal Screwdriver Point Size *a* × *b*	Slotted Head Screw Size	Grub Screw Size
0·4 × 1·6	—	M 2·5
0·4 × 2·5	M 1·6	M 3
0·5 × 3·5	M 2, M 2·2	M 4
0·6 × 4·0	M 2·2, M 2·5	—
0·6 × 5·0	—	M 5
0·8 × 5·5	M 3, M 3·5	M 6
1·0 × 6·5	M 4, M 4·5	M 8
1·2 × 8·0	M 5	M 10
1·6 × 10	M 6	M 12, M 14
2·0 × 13	M 8	M 16
2·5 × 16	M 10	M 18, M 20
3·0 × 14	M 12, M 14	M 22, M 24
4·0 × 22	M 16, M 18	—
5·0 × 25	M 20	—

TABLE 4 TESTING TORQUE FOR SCREWDRIVERS

(*Clause* 8.1)

All dimensions in millimetres.



Nominal Screwdriver Point Size *a* × *b*	Testing Torque N.m	Nominal Screwdriver Point Size *a* × *b*	Testing Torque N.m
0·4 × 1·6	0·2	1·2 × 8·0	11·5
0·4 × 2·5	0·4	1·6 × 10·0	25·6
0·5 × 3·5	0·9	2·0 × 13·0	52·0
0·6 × 4·0	1·4	2·5 × 16·0	100·0
0·6 × 5·0	1·8	3·0 × 14·0	126·0
0·8 × 5·5	3·5	4·0 × 22·0	352·0
1·0 × 6·5	6·5	5·0 × 25·0	625·0

8.1.1 The test disc slot profile shall correspond to the type of tip manufactured. The tolerance for the width and depth of slot of the test disc shall be C9 and h13 respectively. The test disc shall have sufficient strength not to deform and shall have a hardness of at least 800 *HV* or 64 *HRC-* The length of the screwdriver tip inserted in the disc shall correspond to the values of *t, Min* as given in Table 1 (see Fig. 2}.

8.2 *Striking Test*—The blade of the screwdriver shall be laid flat on a steel block and the working end struck four tines with a 200 g hammer [See IS : 841-1968 Specification for hand hammers (*first revision)*] from a height of 150 mm. The working end shall not show visible signs of cracks or other defects on the completion of this test.

9. Preservation and Packing

9.1 The blade of each screwdriver shall be coated with a suitable rust proofing material, where necessary.

9.2 Screwdrivers, after treatment as given in **9.1** may be packed in suitable cartons bearing the type, nominal size, number of screwdrivers packed, manufacturer's name, initials or recognized trade mark and the country of manufacture. Each type and size of screwdrivers shall be packed separately.

10. Sampling — Unless otherwise agreed to between the supplier and the purchaser, the procedure given in IS:2500 { Part I)-1978 'Sampling inspection tables: Part I Inspection by attributes and by count of defects *(frsl revision)* shall be followed for sampling inspection. The sampling plan for various characteristics shall be as given in **10.1** and **10.2**.

10.1 For examining dimensions, general requirements and finish, the sampling plan with inspection level Ill and Acceptable Quality Level (AQL) 2.5 percent given in Tables-1 and 2 of IS : 2500 (Part I)-1973 shall be followed.

10.2 For testing hardness, torque and striking tests, the sampling plan with inspection level land Acceptable Quality Level (AQL) 25 percent given in Tables 1 and 2 of IS : 2500 (Part I) -1973 shall be followed.

11. Marking — Handles or blades of screwdrivers shall be clearly and legibly stamped with the type nominal size of screwdriver, manufacturer's name, initials or recognized trade-mark.

11.1 /S/ *Certification Mating*—Details available with the Indian Standards Institution.

EXPLANATORY NOTE

The applications of different types of screwdriver points would depend on the types of screw. Each type can be manufactured up to a limited point sizes of screwdriver.

This standard was first published in 1962 and revised in 1972. The second revision has been taken up to incorporate certain modifications so as to bring the standard in line with the present manufacturing techniques. The screwdriver point type 5 has been deleted because type 3 can serve the purpose. A clause on dimensions of- plastics handles has been included.

The testing torque values have been calculated using the following formula:

$$M = b\,a^2$$

where

M = testing torque in newton metres,
b = screwdriver point width in millimetres, and
a = screwdriver point thickness in millimetres.

The screwdrivers specified in this standard are intended for use with slotted head and grub screws conforming to the following Indian Standards:

IS: 1365-1978	Slotted countersunk head screws (*third revision*),
IS: 1366-1968	Slotted cheese head screws (dia range 1.6 to 20 mm) (*first revision*),
IS: 2388-1971	Slotted grub screws (*first revision*),
IS:5308-1969	Slotted countersunk head and slotted raised countersunk head screws, small head series (dia 1.6 to 6 mm)
IS: 6736-1972	Slotted raised countersunk head woodscrews,
IS: 6739-1972	Slotted round head wood screws,
IS: 6760-1972	Slotted countersunk head wood screws, and
IS: 8911-1978	Slotted raised countersunk head screws.

In the formulation of this standard, assistance has been derived from the following publications:

ISO 2380-1972 Screwdriver blades for slotted head screws, international Organization for Standardization.

DIN 5264 Schraubendreher fur schlitzschrauben schraubendreherschneiden (Screwdrivers for slotted head and grub screws; screwdrivers blades). Deutsches Institutfiir Normung (DIN).

DIN 5268 Blatt 2 Schraubendrehergriffe aus Kunststoff (Plastic handles for screwdrivers). Deutsches Institut fur Normung { DIN).

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